



# UNITED STATES PATENT AND TRADEMARK OFFICE

BS  
UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/678,652	10/04/2000	Yoshitada Oshida	500.39147X00	7028
20457	7590	11/19/2004	EXAMINER	
ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-9889				SISSON, BRADLEY L
		ART UNIT		PAPER NUMBER
		1634		

DATE MAILED: 11/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	09/678,652	OSHIDA ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Bradley L. Sisson	1634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 30 July 2004.  
 2a) This action is FINAL.      2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-11, 18-29 and 36-47 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-11, 18-29 and 36-47 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-11, 18-29 and 36-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,830,645 (Pinkel et al.) in view of US Patent 5,981,956 (Stern), US Patent 4,538,613 (Rosenberg), and US Patent 5,874,219 (Rava et al.).

5. Pinkel et al., column 12, second full paragraph, discloses a method of inspecting a coupled state of hybridized target DNA on a DNA chip wherein the DNA is arranged on the chip in a predetermined array. The method comprises causing fluorescently labeled DNA probe cells to fluoresce and said fluorescent signals are detected by means of a CCD camera (applicant's "sensor") and the storage and analysis of signals produced by the label bound to the "DNA probe cells" that correspond to the position(s) of the array.

6. Pinkel et al., also teach at column 12 of splitting the beam of light such that

7. Pinkel et al., do not disclose the time of illumination nor the size of the spots the areas of illumination and how that relates to the areas where probe and target DNA are immobilized.

8. Stern, column 10, teaches of detecting fluorescent signals resulting from DNA hybridization reactions where DNA is immobilized to areas of an array. Column 10, lines 21-28, teaches "simultaneous interrogation of a single array with multiple target sequence" and the simultaneous detection of multiple fluorescent signals as a result of using beam splitters. Column 10, second paragraph, teaches "directing" the fluorescent signal to detectors (applicant's sensor") such that the signal is detected, measured, and recorded.

9. Rosenberg, column 19, teaches using laser light that has been split or chopped such that multiple beams can be projected along desired paths toward (or away from the target site). Rosenberg also disclose that the "micro-objective and piezoelectric elements may function either

jointly, sequentially, or simultaneously to direct one or more beams (applicant's "multi-spot excitation lights") onto the fiber array (applicant's "optical paths").

10. Rava et al., column 6, disclose a method whereby the coupled state of hybridized target DNA on a DNA chip is conducted in a simultaneous manner.

11. As seen in one embodiment found in column 6, the probe can be immobilized to the chip while the target DNA is labeled with a fluorescent label.

12. The DNA probe cells can be configured in a 2-dimensional format. Also disclosed is the utilization of rotating polyhedral mirrors to effect simultaneous scanning of a plurality of excitation lights (applicant's fluorescent label).

13. In view of the totality of the teachings of the prior art of record, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the teachings of Rosenberg with that of Stern, Pinkel et al., and Rava as such would have allowed the ordinary artisan the capacity to simultaneously inspect multiple positions of an array where fluorescently labeled target DNA have hybridized (coupled) to a probe, and to thereby obtain information about the strength of such coupling, to store (catalog) such information in a computer system for later analysis and retrieval. In view of the detailed teaching of splitting excitation light, as well as the capture of fluorescent signals from a multitude of positions in a simultaneous manner, the ordinary artisan would have been amply motivated to combine that technology that would have allowed for increased simultaneous signal processing and to have had a most reasonable expectation of success in being able to accurately interrogate such positions and resulting signals.

14. For the above reasons, and in the absence of convincing evidence to the contrary, claims 1-11, 18-29 and 36-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,830,645 (Pinkel et al.) in view of US Patent 5,981,956 (Stern), US Patent 4,538,613 (Rosenberg), and US Patent 5,874,219 (Rava et al.).

***Conclusion***

15. Rejections and/or objections found in the prior Office action and not repeated hereinabove, have been withdrawn.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bradley L. Sisson whose telephone number is (571) 272-0751. The examiner can normally be reached on 6:30 a.m. to 5 p.m., Monday through Thursday.

17. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, W. Gary Jones can be reached on (571) 272-0745. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

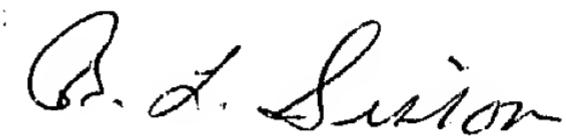
18. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

Application/Control Number: 09/678,652

Page 6

Art Unit: 1634

system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Bradley L. Sisson  
Primary Examiner  
Art Unit 1634

BLS

17 November 2004